

“Constructing Education”: a framework for participation to support the effective planning and use of new school spaces

Costruire l’istruzione: un quadro di partecipazione per supportare la pianificazione e l’uso efficace dei nuovi spazi scolastici

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ABSTRACT

The purpose of this reflection paper is to present a new framework to guide the process of investment in education infrastructure through participatory planning, and to consider its application to the development of innovative spaces. Financing education infrastructure provides an opportunity to innovate to support student learning, but for this to happen infrastructure and education investments need to be conceived from the beginning as a single, intertwined process. The “Constructing Education” framework is based on research evidence about the effects of educational environments and theoretical understanding of change. It draws on the issues identified in a series of in-depth reviews carried out in the cities of Espoo, Finland, the department of Seine-Saint Denis, France and Malmö, Sweden.

SINTESI

Lo scopo di questo documento è presentare un nuovo *framework* per guidare il processo di investimento in infrastrutture educative attraverso la progettazione partecipata e considerare la sua applicazione nello sviluppo di spazi innovativi. Il finanziamento delle infrastrutture educative offre l’opportunità di innovare per supportare l’apprendimento degli studenti, ma affinché ciò avvenga gli investimenti in infrastrutture e istruzione devono essere concepiti fin dall’inizio come un unico processo interconnesso. Il *framework* “Constructing Education” si basa su prove di ricerca circa gli effetti degli ambienti educativi e sulla comprensione teorica del cambiamento. Il contributo attinge alle problematiche individuate in una serie di approfondimenti effettuati nella città di Espoo in Finlandia, nel dipartimento Senna-Saint Denis in Francia e nella città di Malmö in Svezia.

KEYWORDS: student learning and outcomes, teacher practices, investment, ILE, educational change

PAROLE CHIAVE: apprendimento e risultati degli studenti, pratiche degli insegnanti, investimenti, ILE, cambiamento educativo

¹ The findings, interpretations, and conclusions expressed here are those of the author and do not necessarily reflect those of the Organs of the Council of Europe Development Bank (CEB).

1. The potential of innovative educational space

Against a background of increased international interest in the effects of educational space (e.g. Barret et al., 2019, reporting for the World Bank) and extensive investment in educational infrastructure in many countries (EC *interim* paper, 2022), there is enthusiasm for Innovative Learning Environments – ILEs. This interest includes research and policy papers from the OECD (OECD, 2013; 2017) and school building programs centering on particular, innovative, open and flexible designs (Bradbeer et al., 2017; Niemi, 2021; Sigurðardóttir & Hjartarson, 2011). The intention is that schools built to these designs that provide variation in the type of spaces available² can support a wider range of pedagogies, teaching and learning activities and student groupings. These aspects are often seen as enabling individualized or personalized learning, where the teaching staff can respond to each student's particular learning needs (Sigurðardóttir & Hjartarson, 2011). Another key, underpinning, intention of these designs is to promote student autonomy by enabling more student directed learning through providing scholars with more choice about how and where they engage with learning activities (Carvalho & Yeoman, 2018; for a thoughtful discussion on the relationship between innovative learning and alternative forms of school architecture, see Schabmann et al., 2016).

The research base that has accumulated over the last half century, and at an increasing pace in the previous two decades, supports this connection of school design with the processes, and eventual outcomes, of learning and teaching (Higgins et al., 2005; Blackmore et al., 2011; Byers et al., 2018). Thus, changing space can indeed be a way to innovate, in terms of curriculum (Gislason, 2009; Woolner et al. 2018), pedagogy (Imms & Byers, 2017) and variety of educational practices (Carvalho & Yeoman, 2018). Recognizing this connection, regional or national educational policy in the countries noted above, and indeed the papers produced by the OECD, the World Bank and the European Commission, link school design to other educational innovations with the intention of improving student outcomes.

Of fundamental importance, however, in making these connections is the way that the innovative space is used. Over 40 years ago, drawing out implications from a review of the research evidence of the time, Weinstein noted the centrality of the «relationship between physical design and educational program» (1979, p. 599) and, in the years since her review, the need to consider the uses being made of spaces intended for varied pedagogies and student self-direction has become ever more apparent. If the innovative spaces are not being used to support such varied, but often student-centered, learning processes, they cannot be expected to achieve the outcomes expected. Given that an open design is thoroughly unsuitable for traditional, teacher-centered practices, with the openness and arrangement of furniture tending to distract students from focused concentration on the teacher, it should not be surprising that negative effects of these environments on achievement have sometimes been found (Byers et al., 2018). This is an instance of the more

² https://www.indire.it/wp-content/uploads/2016/03/ARC-1602-Manifesto-Inglese_LOW.pdf.

general understanding of the critical importance of alignment between design and use, with alignment evaluated through investigating the various elements that together comprise the learning environment (Gislason; 2009; 2018) or understanding the aspects that underpin the emergent learning activity (Goodyear et al., 2021; Carvalho & Yeoman, 2018).

1.1. The perils of innovative space

Considering the results from past attempts at introducing more open, flexible learning spaces makes clear the challenges of changing from enclosed classrooms (Brogden, 2007; Cooper, 1982), even where school staff are keen to make new arrangements work (Rosén Rasmussen, 2021). The past failures are particularly suggestive when put alongside the signs of problems emerging with schools built recently, in several countries, that include open elements (Grannäs & Marit Stavem, 2021; Wood, 2017; Daniels & Tse, 2018; Jędrasz, 2016). Where the necessary re-imagining of practice, time and space does not occur, the transition from enclosed classrooms to more open, shared space is likely to fail (Gislason, 2015, pp. 110–113; Woolner et al., 2014; Daniels & Tse, 2018). Reflecting on these challenges of adapting staff practices and student expectations to new innovative spaces, Gislason has recently pointed out that «Designing a conventional school is reasonably straightforward because the standard classroom model is deeply rooted in history, and it supports traditional teaching well» (Gislason, 2018, p. 187).

1.2. The centrality of participation

Fortunately, alongside this awareness of the challenges of moving to an open and flexible design, research and practice in education, and beyond, provides timely advice in managing educational change, both generally and in relation to the physical environment of learning. The consistent message from research considering successful educational change, initiated at either school (Ouston et al., 1991) or national levels (Priestley et al., 2011), is that the active involvement of staff is central, preferably through from planning to enacting and then sustaining the change. Similarly, Fullan identifies three elements of successful school change, which are: being embedded in school structures, having a critical mass of school staff trained and committed, and having a procedure for continued support (Fullan, 2007, p. 102). These suggestions of the importance of involving school staff in any change process concurs with understandings developed in architecture about the benefits of participatory, collaborative approaches to designing spaces. In England, within the context of the Building Schools for the Future (BSF) program, which ran from 2003 to 2010, and which included a requirement for «proper consultation with the staff and pupils of the school and the wider community» (Department for Education and Skills, 2002, p. 63), user participation in the design of new educational spaces was explored and benefits for user and building were identified (Parnell et al., 2008; Woolner, 2015). In Iceland, Bruce Jilk’s “Design Down” process, involving school staff and architects concurrently planning a school’s organization, pedagogy and space, was successfully used to design an innovative school that continued to be used as intended (Sigurðardóttir & Hjartarson, 2016). A review of the literature connecting

school space to student outcomes conducted to inform Australian school-building (Blackmore et al., 2011) similarly recommends user involvement, drawing attention to the need for this to extend through all stages from designing to inhabiting. In all these examples, it is possible to see the participation as contributing to a more complete alignment within the learning environment (Gislason, 2009; 2018) or ensuring that the designed set aligns with the social and epistemic aspects (Goodyear et al., 2021; Carvalho & Yeoman, 2018).

Recognizing the evidence-based and theoretical need for such participation is important, but there are further challenges in embedding the participation in policy and practice, particularly if, as has been argued (Cardellino & Woolner, 2020, pp. 398–399), such participation needs to take place every time for every school project. The challenge of this understanding of participation is seen in the discontinuation of BSF, amid claims it was expensive and inefficient, with the James Review (2011) of BSF being particularly critical of the involvement of staff and students in planning and designing their schools. Participation of whom, when and how is also an issue that needs to be discussed in the context of each country's organization of education services. Specifically, the essential distribution and alignment of functions, responsibilities and resources for education infrastructure investments and teachers' management and supervision needs to be considered to ensure an effective delivery of education services (Fiszbein, 2001) and an alignment of the systems with learning (World Bank, 2018). Yet, despite these challenges, the alternative to a bespoke approach can be to fall into the acknowledged traps of standardization and the transfer of educational products, such as curriculum and policy (Clapham & Vickers, 2018), between schools and even nations. However, in the context of international school design, where the uncritical roll-out of a product across national borders is unlikely to be successful (Wood, 2020), a process can be more adaptable to local contexts and cultures (Woolner & Cardellino, 2021).

2. The current construction and education disconnect

Significant funds are invested yearly in education infrastructure in European countries, mostly in response to demographic trends and modernization priorities. These investments are becoming more relevant after the COVID-19 crisis and countries' engagement with the sector is reflected in their planned investments through the National Recovery and Resilience Plans (EC, 2022; Duthilleul et al., 2021). Investments in education are usually argued on the ground of their contribution to human capital development and growth or as a human right (Drawler, 2014) and more recently, for their contribution to well-being for all and sustainability (O'Brien & Howard, 2016). Behind these different arguments, it is not the existence of school buildings that is in contention, but the learning that students are expected to engage in (Hanushek & Woessmann, 2015; Leat et al., 2012).

However, when schools are visited, it is possible sometimes to observe that the innovative learning spaces supported through the multiple investments are not being used as they were conceived: teachers sometimes close-up open spaces, cover

transparent glass walls and doors with drawings, or even prevent students from using the informal areas for fear of having them vandalized (Duthilleul et al., 2019). Teachers acknowledge that they have not been trained to know how to use these new spaces, either because they were trained a long time ago when these innovative spaces did not exist or just because they did not have access to these new learning environments when they completed their initial education (Duthilleul et al., 2018). Sometimes differences in aims and objectives over time on the education vision guiding these investments lead to tensions and disconnects in use and practice (Daniels et al., 2017; Duthilleul et al., 2020). This suggests that investments in innovative infrastructure might not be delivering the expected benefits in terms of student learning, as they are not being used as intended. A set of reviews carried out by the Council of Europe Development Bank to examine further the links between education and construction departments for a selected sample of education infrastructure investments financed sheds some light onto this issue. These reviews helped confirm that there is a major disconnect between education and construction departments practices and processes in most countries, even when the construction design was purposefully created to enhance 21st century skills.

In the schools visited, very little had been done to help school staff be ready to make the best possible use of the new learning environments or support their transition to them. Teachers in general were not engaged in the construction process itself, some arriving only later to the new premises, others not seeing it as relevant to their practices. The involvement of school principals varied, some more engaged during an extension or renovation of the existing premises than for a new school, but all this subject to change if transferred to a new school after works. Evaluating the use of the spaces to guide future designs and investments was almost non-existent as a systematic practice (Duthilleul et al., 2018; 2019; 2020). This lack of evaluation reflects the more general neglect or narrowness of POE that has frustrated architects for decades (Cooper, 2001), but seems a particularly missed opportunity in the context of education investments where use and process are so central to outcomes, and funding is recurrent.

As a response to this disconnect between education and construction, and with the intent to make investments in education infrastructure more effective and better contributors to the expected learning outcomes, the Council of Europe Development Bank developed the “Constructing Education” framework (Duthilleul, Woolner & Whelan, 2021). The framework builds on quality research and fieldwork to propose a practice-based strategy to support the development of effective learning environments, effective in how they are used to support student learning, not just effectively built.

3. The “Constructing Education” framework

The framework responds to the current state of knowledge, comprising the evidence base and theoretical understandings, in relation to processes of change and to innovative spaces and practices in educational settings. Further, it addresses

Blackmore's (2011) concern of looking beyond the planning stage to understand how school users adapt their practices to the new spaces, as well as connecting to continued concerns of architects about POE, through drawing on the ability of teachers to be reflective practitioners (Schön, 1984). It recognizes the centrality of teachers' practices, but also understands school staff as situated within organizational systems (Lackney, 2008; French et al., 2022). What the proposed framework does is to embed an education perspective along the four phases that traditionally guide the construction process (initial design, construction, hand-over and post-occupancy evaluation) and identify what activities need to happen, from an education point of view, to ensure that when the school is delivered, the space can be used by all users to its full potential to promote student learning, and teachers are ready for this. It is also argued that the costs associated with these educational activities must be added to the construction costs and included in the total costs of the investment to be financed.

The proposed phases require some arbitrary decisions and some of the activities suggested can fall in one or another phase, depending on the country's organization, but what counts here is that the activities presented take place, at some moment along the process. The overarching intention is that collaborative actions undertaken across the phases, at differing levels, ensure a better alignment of design and use so that school spaces built, refurbished or reorganized can be more effective contributors to students' learning. These individual, structural and cultural actions do not translate into organizational levels (such as school, municipality, national – not least because the role and influence of actors at these levels varies across countries). Instead, they are qualitatively different sorts of activity – activities of people, essentially on their own, although within a supportive environment; structures that enable or constrain collective and individual actions, which can be put in place by those at various levels of a system; and, finally, the value systems and climate found within schools, but which are underpinned by wider cultural values and beliefs about education. It is also important to note that the direction of influence will not necessarily be in one direction through this system. Instead, there are possibilities for influence in all directions and that is why the framework proposes activities for each level, which can be hoped to nudge aligned activity at the other levels. Research shows that educational change is more powerful and sustainable if enacted across these levels of culture, structure and agency (Priestley et al., 2011; Szczesiul & Huizenga, 2014). Furthermore, in relation to educational space specifically, it has been found that powerful change occurs when interconnected and dependent changes are made by individuals, in school structures and within the organizational culture (Woolner et al., 2018). Therefore, the intention of the framework's activities is to enable coordinated change to move between the levels and through the phases to achieve a lasting alignment within the total learning environment. It is such alignment that is certainly required for a move to an ILE to be successful, and we anticipate that the framework can support its achievement.

The full framework is included as an Appendix, but Table 1 provides a summary with some suggested questions to provoke those involved with a move to an ILE to

plan their activities centered on «helping teachers make the most of these environments» (Imms, 2018, p. 11).

	Phase 1	Phase 2	Phase 3	Phase 4
ARCHITECTURAL	BRIEF	CONSTRUCTION	HAND OVER	POE
EDUCATIONAL	INITIAL PLANNING	GETTING READY	MOVING IN	REFLECTING & ADJUSTING
Individuals: actions of teachers and principals, opportunities for agency	<i>Who to involve? How?</i>	<i>What are staff and student expectations of new space? Can more people now be involved? Who?</i>	<i>How can staff and students personalize the space?</i>	<i>Who should lead on what aspects?</i>
Structures: timetabling, curriculum, staff and student organization	<i>What timetabling, student groups and staffing are needed for the ILE to work?</i>	<i>Is formal professional development relating to ILEs available? What space and furniture can be used to prepare staff? What time can be provided for collaborative teacher planning?</i>	<i>How can staff meet to discuss changes? What time can be provided for ongoing collaborative planning?</i>	<i>Is space and use coherent? Any further development needed?</i>
Culture: school climate, social values, and educational values	<i>What is the vision?</i>	<i>Is the change understood and valued?</i>	<i>How can we acknowledge any sense of loss?</i>	<i>Does the vision need adjusting?</i>

TABLE 1 – “CONSTRUCTING EDUCATION”: A FRAMEWORK FOR PARTICIPATION IN MOVING TO AN ILE

4. Reflecting on the use of the “Constructing Education” framework

The implementation of the “Constructing Education” framework as a tool to foster more effective investments in education infrastructure is now being piloted in selected schools and countries with the joint support of the Council of Europe Development Bank and the European Investment Bank. We are interested in discovering the feasibility of the proposed activities, the roles of the people who can make it happen and the costs of doing so.

Very approximate estimates of the costs we would expect of implementing the framework were included (Duthilleul et al., 2021, p. 36), relating largely to people’s time, but validating these estimates, particularly through establishing the time required to implement the framework effectively, is a key part of the ongoing trial. The conclusions of Blackmore and colleagues (2011), about the need for time for teacher collaboration at all stages in developing pedagogical practice, which were

built into the framework, have financial implications due to the inevitable links between time and money. If staff are to meet to plan or evaluate, they may need to be paid for this when it takes place outside their working hours. If time is made available within normal working hours, it might be necessary to provide and pay for cover staff to carry out the normal staff duties. As we are discovering, the best ways to provide this staff time, and so the costs of doing so, will vary between national contexts due to the professional roles, responsibilities and, indeed, contractual expectations of teachers within that country. We have also observed this funding for professional development or pedagogical planning being considered, by the authorities overseeing procurement and construction, as a cost, which is in some contrast to the investment they see represented by the expense of the building itself.

Preparing for and undertaking a move, once the school design has been finalized, are stages that had tended to be overlooked in the research into learning environments (Blackmore et al., 2011). Although here is now considerably more research (e.g. French et al., 2019; Daniels, & Tse, 2018; Rosén Rasmussen, 2021), our trialing suggests that the opportunity to get ready for the changed space and practices of an ILE is still being overlooked in practice. In contrast, the challenges of “Moving In” are recognized by the various stakeholders, if often understood and experienced in terms of architectural “Hand Over” and logistical challenges of packing and unpacking, with the inevitable constraints this involves on time and energy to engage with pedagogical use of the ILE. Therefore, one key initial insight provided by our pilot is that the “Getting Ready” phase, specifically, is one that should deserve more attention when schools are being designed and built, particularly when a move to an ILE from a traditional design is underway. This leads to questions about how to increase awareness among the different stakeholders, at state, municipal and school levels, about the importance of addressing this gap. We are also considering ways to mobilize additional resources and overcome the bottlenecks that exist in the governance systems we are working with.

Conclusions

The “Constructing Education” framework proposes a process to be followed to promote more effective investments in education infrastructure and it can be used as a tool to plan and enact a move into an ILE that succeeds in exploiting the pedagogical potential provided by such a design. It seeks to reduce wasted investments, defined by French and colleagues (2019) as investments in new spaces that do not foresee the necessary investments in teaching practice to enable the full use of the potential provided by an ILE. These wasted investments also frequently result in misaligned learning environments, which are often ameliorated, at some expense, by physical alterations that seek to a return to the «conventional school...[that]...supports traditional teaching well» (Gisalson, 2018, p. 187), and so undermining the original innovative intentions (Daniels & Tse, 2018). Thus, the framework should indeed enable spending better on educational infrastructure, as promoted by the 2018 World Development Report.

It is known from the British experience with Building Schools for the Future (BSF), that mandated requirements for participation might not always produce genuine collaboration. Although there were examples of successful participatory design within BSF, many attempts appear to have been undermined by an absence of dedicated funding for the participation that was required by the program to happen (Parnell et al., 2008). The same observation about the need for ring-fenced funding is frequently made by architects wanting to make post occupancy evaluation a more standard part of design practice. Similarly, to ensure the “Constructing Education” process is respected, the necessary financial resources to undertake the proposed activities need to be included. In addition, systems must be developed to ensure that the participation of the different stakeholders through the process is not imposed and not voluntary but seen as part of the job appropriately supported by the necessary tools, truly an investment rather than a cost.

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Appendix: “Constructing Education” – A framework of multi-stakeholder collaboration combining an architectural and educational perspective

	Phase 1	Phase 2	Phase 3	Phase 4
ARCHITECTURAL	BRIEF	CONSTRUCTION	HAND OVER	POE
EDUCATIONAL	INITIAL PLANNING	GETTING READY	MOVING IN	REFLECTING & ADJUSTING
Individuals: actions of teachers and principals, opportunities for agency	Ensure the direct involvement in the design by key individuals – the school principal <i>and</i> trailblazers who will become champions - including operations and maintenance staff.	Devolve responsibility and provide opportunities beyond leaders: establish ‘area leads’, who are not senior staff, and have either teaching or non-teaching roles to direct specific aspects of planning for change.	Enable the personalization of individual space (desks, lockers, rooms as appropriate) and develop collective ownership of shared space (staff room, shared offices, specialist teaching spaces, library).	Establish area leads, who are not senior staff, to direct specific aspects of evaluating and reflecting on change process, and to organize the collection of information (use visual methods supported by interviews and focus groups).
Structures: timetabling, curriculum, staff and student organization	Coherence ensured through curriculum and organizational decisions (student grouping, staffing, timetabling) that align with spatial design. This planning process should involve the wider staff body but be led by the principal.	Prepare teachers for the new environment, offer support to develop their practices to make full use of the new space. Make time for meetings: for teachers, other staff, and with the local community. Find space to trial new ways of working. Ensure communication of progress on the building work – use school website, displays accessible to school users and to the local community. Plan removal and re-installation of useful or loved parts of old building.	Provide time for collaborative planning by teachers and offer continued support in the transition to the new spaces. Maintain communication with local community. Tweak and trouble-shoot in response to user views, including those of students. Make changes to decoration and furnishings. Include items or memorabilia from old premises to make recognition of the past visible.	Use frameworks and tools to investigate the coherence of the space and its use. Make adjustments as required to space and practices, using specialist professional development as appropriate. Where coherence is achieved, consider further developments – such as to the outdoor space, library, or specialist teaching spaces. Continue to protect time for teacher collaboration, further development of their practices, and shared planning. Initiate succession planning.
Culture: school climate, social values, and educational values	Vision for the new or redeveloped school is articulated at school level, drawing on national or regional context and requirements. Clear leadership at school or district level is combined with willingness to listen.	Ensure that the rebuild is understood as part of a bigger (and worthwhile) change.	Acknowledge and manage the sense of loss that will be felt by some staff members, students and members of the wider community. Events linked to the re-installed elements could be organized.	Ensure that an over-arching idea or set of values is articulated, visible and explicitly shared. Consider any adjustment or development that might be needed.